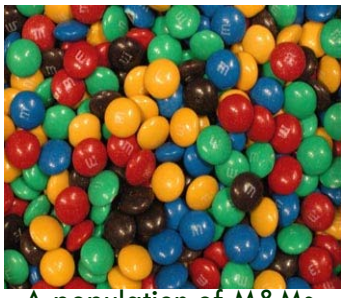
"Oh, How Times Change."

LAB CRAWL 2008 HALF-LIFE ACTIVITY #1

Summer 2008



A population of M&Ms

The concept of using the half-life of a radioactive element to determine the age of a rock can be a confusing concept when first introduced. This series of 3 activities is designed to ease a group of students into a complete understanding of the relationship between half-life and geologic age.

"Oh, How Times Change.": Half-Life Activity #1

Activity #1:

M&M population changes

Students will be collecting observations on a population of M&Ms as they experience some random changes to their environment. Starting with a plate of FACE UP candies, students will shake their M&Ms and remove (eat if desired) any candies that have flipped face down.

Stress with students the importance of making careful observations, as well as accurate counting and recording.

As you circulate around the room, have individual groups collaborate on a whole class set of data (on the board, your computer, etc.).

It is important, at this point, to refrain from connecting this activity to radioactive decay. *This is about M&Ms only at this point.*

When you feel that students can comfortably explain the general changes the M&Ms experience (they lose about half of their population each time), it will become prior knowledge used in activity #2.

Activity Directions

Have students count out 100 M&Ms. Put all candies on the bottom of a semi-deep tray (or any comparable item) and turn them all FACE UP.

Students are to shake the tray 4 times for each trial. Remove (and eat) all of the FACE DOWN candies. Count the remaining FACE UP candies and record the number and ratio on the data table. Repeat for trials 2-4.

Collect a whole class set of data for each trial. After analyzing class data, students should be writing a description for how the M&M "population" changes from trial to trial.

Teacher notes: The face *UP* represents PARENT MATERIAL. The face DOWN candies represent atoms that have decayed into something else (DAUGHTER MATERIAL).

MATERIALS

- M&M CANDIES
- TRAY, PLATES, OR CUP
- WORKSHEETS

S.S.S. Science Addressed:

SC.A.1.3
2.3

SC.D.1.3
2.3

SC.E.1.3

SC.G.1.3

SC.H.1.3
2.3
3.3

STUDENT ACTIVITY

LAB CRAWL 2008 HALF-LIFE ACTIVITY #1

M&M Activity: Observe and record how the plate of M&Ms change after each shake:

TRIAL	# of Parent Material (face up M&Ms) COLUMN A	Ratio of parent material to TOTAL original (column A / 100)
Start	100	100 / 100 = 100%
1		/ 100 = %
2		/ 100 = %
3		/ 100 = %
4		/ 100 = %

GROUP DATA: TRAIL	# of Parent Material (face up M&Ms) COLUMN A	% of Parent Material (face up M&Ms) COLUMN A
Start	*total M&Ms in class*	total / total = 100%
1		/ total = %
2		/ total = %
3		/ total = %
4		/ total = %

How would you BEST describe the overall change to the M&M population from one trial to the next?

Created by: R. McHenry; D. Rodriguez, M. Guyton

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